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| EXAMINER |
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ALUNKAL, THOMAS D

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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| Office Action Summary | Application No. 10/786,073 | Applicant(s) HEOR ET AL. | |
| | Examiner Thomas D. Alunkal | Art Unit 2627 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 and 19-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 19-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Arguments

Applicant's arguments filed 3/12/07 have been fully considered but they are not persuasive.

On page 11, applicant argues that Ueda et al. (hereafter Ueda)(6,314,064) do not disclose the limitation recited by former dependent claim 18, which is now incorporated in independent claims 1, 17, and 33. The examiner respectfully disagrees. As illustrated in Figure 1 of Ueda, optical system 12 which is configured to be compatible with both CD and DVD type optical media (Element 6 and 7, respectively). Objective lens focuses both CD and DVD light onto their respective media, which each require a different level of focus (achieved with different NA). Figure 11 further exemplifies this point with the exclusion of hologram element 33 while using the same object lens 34. Clearly, both the CD and DVD light beams entering objective lens 34 are on the same optical axis. However, the CD and DVD light beams exiting the objective lens have different focal point. Thus, objective lens 34 clearly forms two different numerical apertures depending upon the incident light. Thus, the rejection for former dependent claim 18 is maintained.

Furthermore, applicant argues that the cited art in claim 20 disclosing Applicant's Admitted Prior Art is not "Prior Art". In Paragraphs 0005-0009 of applicant's specification, the applicant is disclosing information, which is conventional in the optical storage art. In lines 11-13 of Paragraph 0009, applicant states, "Of course, for the CD, the NA of the objective lens is 0.45, and for the DVD, the NA of the objective lens is

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increased to 0.6". From the well known equations (1) and (2) to the context in which lines 11-13 of Paragraph 0009 are recited, the Examiner believes this information located in the Background of the Invention section of the application, to be admitted prior art. Thus, the rejection for claim 20 is maintained.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3,10-11,14-17,19,21-22,24-29, and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Ueda et al (hereafter Ueda) (US 6,314,064).

Regarding claim 1, Ueda discloses a compatible optical pickup which can be compatibly used for first through third recording media having different recording densities and formats (Column 4, lines 7-21), comprising: a first light source which emits a first light beam having a first wavelength suitable for the first recording medium (Figure 1, Element 28); a twin light source which emits second and third light beams respectively having second and third wavelengths suitable for the corresponding second and third recording media (Figure 1, Element 31 and Figure 5, Element 55,56); a first objective lens which condenses the first light beam to form a light spot for recording

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and/or reproduction of the first recording medium (Figure 1, Element 22); a second objective lens which condenses the second and third light beams to form light spots for recording and/or reproduction of the received one of the second and third recording media (Figure 1, Element 34); an actuator which drives the first and second objective lenses (Figures 2 and 3 and Column 5, lines 53-55); a first photo-detector which receives the first light beam reflected from the first recording medium to detect an information signal and/or an error signal (Figure 1, Element 28); and a second photo-detector which receives the second and third light beams reflected from the received one of the second and third recording media to detect information signals and/or error signals (Figure 5, Elements 57 and 58), wherein the first objective lens forms a first numerical aperture for use with the first optical medium (Figure 1, Elements 34 and 6) and a second numerical aperture other than the first numerical aperture for use with the second optical medium (Figure 1, Elements 34 and 7. It is noted that it is an inherent property of NA to change with differing wavelength light), and the second objective lens forms a third numerical aperture which is other than the first and second numerical apertures for use with the third optical medium (Figure 1, Elements 22 and 8).

Regarding claim 2, Ueda discloses wherein the actuator comprises: a single lens holder to hold the first and second objective lenses (Figure 2, Element 36); and a magnetic circuit which drives the single lens holder in a direction (Figures 2 and 3, Element 37 and Column 5, lines 53-55).

Regarding claim 3, Ueda discloses wherein the single lens holder holds the first and second lenses at different heights above a common surface (Column 5, lines 10-16.

Lens 22 can be adjusted to different heights above the optical disc. Thus, first and second lenses are at different heights above a common surface).

Regarding claim 10, Ueda discloses wherein the second photo-detector comprises first and second main photo-detectors (Figure 5, Elements 57 and 58) which receive the second and third beams respectively (Column 7, lines 41-46).

Regarding claim 11, Ueda discloses a grating which diffracts the second and/or third light beams emitted from the twin light source into at least three beams (Column 8, lines 32-40. The differential three-segment method corresponds to the three beams emitted from the light source), wherein the second photo-detector further comprises a plurality of sub photo-detectors which receive sub beams split by the grating (Figure 6, Elements 57 and 58).

Regarding claim 14, Ueda discloses wherein one of the first through third recording media is a CD-family optical disc (Column 4, lines 4-7), another is a DVD-family optical disc (Column 4, lines 7-9), and the other is a next generation DVD-family optical disc which has a higher density than the DVD (Column 4, lines 14-16).

Regarding claim 15, Ueda discloses wherein the next generation DVD-family disc has a thickness of about 0.1mm (Column 4, lines 16-18), is recorded and/or reproduced using a blue violet beam (Column 4, 48-51, which encompasses the blue-violet wavelength band), and the one of the first and second objective lenses used for the next generation DVD-family optical disc has a numerical aperture of at or more than 0.85 (Column 5, lines 1-3).

Regarding claim 16, Ueda discloses a recording and/or reproducing apparatus for use with first through third optical media having corresponding thicknesses (Column 4, lines 37-47) comprising the compatible optical pickup of claim 1 which is compatible for recording and/or reproducing with respect to each of the first through third optical media (Column 4, lines 37-47), and a controller to control the compatible optical pickup to recording and/or reproduce data with respect to a received one of the first through third optical media (Figure 8, which displays focus controller).

Regarding claim 17, this claim contains limitations similar to those of claims 1, 10, and 16, and is rejected over the same grounds.

Regarding claim 19, Ueda discloses wherein the third numerical aperture is not usable with the first and second optical media (Column 5, lines 1-5. A numerical aperture of 0.85 is specifically used for the high density recording media).

Regarding claims 21 and 22, these claims contain limitations similar to those of claims 2 and 3 and are rejected over the same grounds.

Regarding claim 24, Ueda discloses wherein the optical property of the first objective lens comprises a holographic pattern which has a first numerical aperture with respect to the first light beam having a first wavelength for use in recording and/or reproducing data with respect to the first optical medium, and a second numerical aperture with respect to the second light beam having a second wavelength other than the first wavelength for use in recording and/or reproducing data with respect to the second optical medium (Figure 1, Element 33 and Column 5, lines 40-49. Note, it is an

inherent property of the objective lens to change NA with changing incident wavelength).

Regarding claim 25, Ueda discloses wherein the optical property of the first objective lens is optimized for recording and/or reproducing with respect to the first optical recording medium and is usable for recording and/or reproducing with respect to the second optical medium (Figure 1, Element 34 and Figure 5, Elements 56 and 57). Specifically, objective lens 34 is used to focus laser light of a respective wavelength onto optical media (Figure 1, Elements 6 and 7), and the second objective lens is optimized for use with the third recording medium (Figure 1, Elements 8 and 22).

Regarding claim 26, this claim contains limitations similar to those in claim 14 and is rejected over the same grounds.

Regarding claim 27, Ueda discloses wherein the third light beam has a wavelength that is less than a wavelength of the first light beam (Column 4, lines 48-51 and Column 10, lines 27-30).

Regarding claim 28, Ueda discloses wherein the wavelength of the third light beam is substantially 405nm (Column 4, lines 48-51, which encompasses the blue-violet wavelength band).

Regarding claim 29, this claim contains limitations similar to those of claims 14, 15, and 18 and is rejected over the same grounds.

Regarding claim 32, this claim contains limitations similar to those of claim 16 and is rejected over the same grounds.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4,6-7,9,23 and 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda et al (hereafter Ueda)(US 6,314,064).

Regarding claim 4, Ueda discloses a working distance (WD1) of one of the first and second objective lenses (Figure 1, the distance between Elements 34 and 6/7), a working distance (WD2) of the other one of the first and second objective lenses which has a long working distance (Figure 1, the distance between Elements 22 and 8). Ueda does not specifically disclose the relationship between the first and second objective lenses meeting the following criteria, which are WD2 is greater than or equal to WD1 and a basic separating distance of the one objective lens relative to the corresponding one of the first through third recording media is $WD1 + \alpha$, and $\alpha = |WD2 - WD1| \times (0.1 \sim 1.0)$. However, in Column 5, Lines 10-16, Ueda discloses the separation distance of the first objective lens being larger than the working distance of the first objective lens. Thus, the distance between the first and second objective lenses, as well as, the distance between one objective lens and one of first through third media is adjustable and yields the relationship criteria above. It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to obtain the above

values through routine experimentation and optimization in the absence of criticality. Thus, it is not inventive to discover the optimum or workable ranges by routine experimentation (In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)). Please consult MPEP 2144.05 for further explanation.

Regarding claim 6, Ueda discloses wherein one of the first through third recording media is a CD-family optical disc (Column 4, lines 4-7), another is a DVD-family optical disc (Column 4, lines 7-9), and the other is a next generation DVD-family optical disc which has a higher density than the DVD (Column 4, lines 14-16).

Regarding claim 7, this claim contains limitations similar to those of claim 4 and is rejected over the same grounds.

Regarding claim 9, this claim contains limitations similar to those of claim 6 and is rejected over the same grounds.

Regarding claim 23, this claim contains limitations similar to those of claim 4 and are rejected over the same grounds.

Regarding claims 33 and 34, these claims contain limitation similar to those of claims 1,2,3,4, and 16.

Claims 5,8,12-13, and 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda et al (hereafter Ueda)(US 6,314,064) as applied to claims 1-4,6-7,9-11,14-17,19,21-29, and 32-34 above and in further view of Nagashima et al (US 6,304,526).

Regarding claim 5, Ueda does not disclose wherein at least one of the first and second objective lenses is formed so that a wavefront aberration occurring mainly due

to a tilt of the objective lens and a wavefront aberration occurring mainly due to a tilt of light incident on the objective lens become a same type of aberration. In the same field of endeavor, Nagashima discloses wherein at least one of the first and second objective lenses is formed so that a wavefront aberration occurring mainly due to a tilt of the objective lens and a wavefront aberration occurring mainly due to a tilt of light incident on the objective lens become a same type of aberration (Column 5, lines 5-24).

One of ordinary skill in the art at the time of the applicant's invention would have found it obvious to provide the optical pickup device of Ueda with the aberration correction means of Nagashima, motivation being to eliminate unwanted aberrations in the optical system which lead to a deterioration in writing/reproducing to and from the disc.

Regarding claims 8, 12, 13, and 30, these claims contain limitations similar to those of claim 5 and are rejected over the same grounds.

Regarding claim 31, Ueda discloses wherein the optical system compensates for the common aberration by moving a light emitting portion of the corresponding one of the first and second optical units within a plane perpendicular to the corresponding optical pathway (Figure 3, specifically, the directions Y1 and Y2, which show the movement directions).

Claims 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda et al (hereafter Ueda)(US 6,314,064) as applied to claims 1-4, 6-7, 9-11, 14-17, 19, 21-29, and 32-34 above and in further view of Applicant's Admitted Prior Art.

Regarding claim 20, Ueda discloses the third numerical aperture is greater than 0.6 (Column 5, lines 1-5). Ueda does not disclose wherein the first and second numerical apertures are at or less than 0.6. However, Applicant's Admitted Prior Art discloses that the objective lens numerical apertures for CDs and DVDs are 0.45 and 0.6, respectively.

One of ordinary skill in the art at the time of the applicant's invention would have found it obvious to provide the optical pickup device of Ueda with the specific numerical apertures of the Applicant's Admitted Prior Art, motivation being to ensure quality read/write operations on the various optical media.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas D. Alunkal whose telephone number is (571)270-1127. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on (571)272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Thomas Alunkal



BRIAN E. MILLER
PRIMARY EXAMINER